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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/801,543	03/17/2004	Gerard Hillion	PET-2130	2321
23599	7590	11/09/2006	EXAMINER	
MILLEN, WHITE, ZELANO & BRANIGAN, P.C. 2200 CLARENDON BLVD. SUITE 1400 ARLINGTON, VA 22201			WARTALOWICZ, PAUL A	
			ART UNIT	PAPER NUMBER
			1754	

DATE MAILED: 11/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/801,543

Applicant(s)

HILLION ET AL.

Examiner

Paul A. Wartalowicz

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 August 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

Response to Arguments

Applicant's arguments filed 8/30/06 have been fully considered but they are not persuasive.

Applicant argues that Stern does not teach or suggest a process in which zinc oxide and a zinc salt are, as a mixture, mixed with alumina gel that has been peptized in the presence of water and nitric acid, so as to form a paste.

However, the present invention recites "necessary for formation of said catalyst, in which *at least a portion* of the zinc oxide is replaced" (claim 1). Claim one does not necessitate a mixture of zinc oxide and a zinc salt, only that at least a portion is replaced with a zinc salt. In reciting "at least a portion", the claim sets no upper bound for the replacement of a zinc salt such that substantially all of the zinc oxide could be replaced with a zinc salt. Stern teaches that the zinc component is zinc carbonate, and therefore teaches this limitation of the current invention.

Applicant argues one of ordinary skill would not be motivated to combine John and Stern because John teaches a method for impregnation whereas Stern teaches a method for mixing and that one of ordinary skill would recognize that impregnation and mixing steps would vary.

However, the step relied upon in John is a step common between the impregnation process of John and the mixing process of Stern et al. The motivation for combination is to mix zinc nitrate with an aqueous solution for a period of time to ensure dissolution of the salt is well known. This teaching is applicable to both processes of

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impregnation and mixing and one of ordinary skill would recognize the similarity in this step.

Applicant argues that John or Andersen do not remedy the deficiency of mixing zinc oxide and a zinc salt before mixing with an alumina that has been peptized.

However, neither John nor Andersen is not relied upon to teach mixing zinc oxide and a zinc salt before mixing with an alumina that has been peptized. In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Applicant argues that resistance to crushing of the present invention are shown to be improved versus a catalyst that is produced by mixture of zinc oxide with alumina gel.

However, the prior art of record teaches mixing zinc salt, zinc oxide, and an alumina in peptizing conditions. The prior art of record does not teach a catalyst which is produced by mixture of zinc oxide with alumina gel. This comparison in the specification is not relevant to the comparison of the prior art of record with the present invention.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 16-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 16 recites "a mixture of zinc oxide and a zinc carbonate or nitrate". Claims 17 and 18 recite "wherein at least 33% of zinc oxide is replaced" and "wherein at least 50% of zinc oxide is replaced", respectively. It is unclear what the upper boundary of how much of the zinc oxide is replaced. Is it wherein at least 33-75%, 33-85%? As the claim is currently written, the upper bound is 100%, wherein substantially all of the zinc oxide is replaced with a zinc salt. This is in contradiction with claim 16 that recites "a mixture".

Clarification and/or correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stern et al. (U.S. 5908946) in view of John (G.B. 2181070) and Andersen et al. (U.S. 5830305).

Stern et al. teach a process for making ZnAl_2O_4 , $x \text{ ZnO}$, $y \text{ Al}_2\text{O}_3$ whereby x and y are in the range of 0-2 wherein zinc oxide and zinc carbonate (stage (a)) are mixed with hydrated alumina in nitric acid (hydrated alumina is alumina gel, col. 5, lines 40-47) (stage (b)) and wherein the paste formed is extruded (stage (c)), dried (stage (d)), and then calcined (stage (e)) (col. 5, lines 45-49) and wherein the mixed product is shaped by extrusion after mixing step (inherently teaches the limitation wherein water is added during the mixing to reach a suitable consistency of the paste, col. 5, lines 45-49).

Stern et al. fail to teach the temperatures and time periods of stages a, b, and c.

As to the limitation in claims 1 and 16 of alumina gel has been peptized before mixing with a mixture obtained in stage (a), it would be obvious based upon the explanation that it would be obvious to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as peptizing an alumina prior to mixing with a mixture of zinc oxide and zinc carbonate.

As to the limitation in claim 16 of mixing an alumina gel with a mixture of zinc oxide and a zinc carbonate or nitrate, and optionally extruding, drying and calcining a resultant paste, it would be obvious based upon the explanation that it would be obvious to one of ordinary skill in the art to make changes in sequence of adding ingredients (*In re Rose*, 105 USPQ 137) such as mixing the zinc compounds prior to mixing the zinc mixture with alumina gel.

As to the limitation wherein the mixing stage (a) is carried out over a period encompassed between 30 and 60 minutes in a container that is equipped with a stirring mechanism until the consistency of a thick cream is achieved, John, however teach a catalyst comprising a zinc aluminate (page 1, lines 25-30) wherein a zinc nitrate hydrate solution is dissolved in water (inherently teaches the limitation of mixing to enact complete dissolution, page 2, line 61-page 3, line 3) for the purpose of making a solution with the correct zinc content (page 1, lines 45-55). Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein a zinc nitrate hydrate solution is dissolved in water (inherently teaches the limitation of mixing to enact complete dissolution, page 2, line 61-page 3, line 3) in Stern et al. in order to make a solution with the correct zinc content (page 1, lines 45-55) as taught by John.

This combined teaching meets the limitation wherein stage (a) encompassed between 30 and 60 minutes in a container by the reasoned explanation that in order to produce a well-mixed solution (homogenous solution, page 3, lines 1-3), mixing would occur for a predetermined period of time.

As to the limitation wherein the mixing time of stage (b) is encompassed between 60 and 120 minutes and wherein the temperature gradually rises to reach a value of between 60°C and 65°C, John, however teach wherein a zinc compound is added to alumina at a temperature of 70°C for a time period of approximately 2 hours for the purpose of attaining a thick paste (page 3, lines 20-25). Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein a zinc compound is added to alumina at a temperature of 70°C for a time period of approximately 2 hours in Stern et al. in order to attain a thick paste (page 3, lines 20-25) as taught by John. The prior art range is so close that one skilled in the art would have expected it to have the same properties. *Titanium Metals Corp. v. Banner*, 227 USPQ 773.

As to the limitation wherein stage (c) consists in extruding the paste that is thus obtained from a die with a diameter of between 1.5 and 3.7 mm of diameter, John, however teach wherein a zinc aluminate paste is extruded having a diameter of approximately 1.6 mm for the purpose of forming extrudates to be used as catalysts (page 3, lines 22-26). Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein a zinc aluminate paste is extruded having a diameter of approximately 1.6 mm in Stern et al. in order to form extrudates to be used as catalysts (page 3, lines 22-26) as taught by John.

As to the limitation wherein a pressure of higher than 2 MPa is exerted on the die so as to obtain compact extrudates that have a flawless surface condition and wherein

at the end of operation the pressure again becomes less than 2 MPa, the recovered extrudates are not preserved, Andersen et al. teaches wherein it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to exert pressure on a die, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to exert a pressure on a die by the reasoned explanation that it is well known to impart pressure on dies of from 50 psi to 20000 psi for the purpose of maximizing strength and structural intensity (paragraph 253, lines 1-12).

As to the limitation wherein the recovered extrudates are not preserved, it would be obvious to not impart pressure on dies at the above mentioned pressures if the desired effect was to not impart strength and structural intensity as taught by Andersen et al.

As to the limitation wherein first drying phase is operated at 80°C for 3 hours, then said second drying phase is operated in two stages, at 100°C for about 2 hours and then at about 150°C for about 2 hours and wherein stage (e) is carried out at a temperature of between 400°C and 700°C for a period of between 2 and 4 hours and wherein stage (e) is carried out at a temperature of about 700°C for about 2 hours with a temperature rise gradient encompassed between 3 and 6°C/minute, John teach wherein it is known to vary the time required to carry out the calcination of the carrier

(inherently teaches that times for heating are dependent on the temperature of the heating conditions, also inherently teaches that drying times can be varied depending on temperature, page 2, lines 20-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to vary the time to carry out a heating step, since it has been held that discovering an optimum value or a result effective variable involved only routine skill in the art. In re Boesch, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980). The artisan would have been motivated to optimize the time to carry out a heating step by the reasoned explanation that drying times can be optimized depending on the temperature of the heating step.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Paul Wartalowicz
November 6, 2006



STUART L. HENDRICKSON
PRIMARY EXAMINER